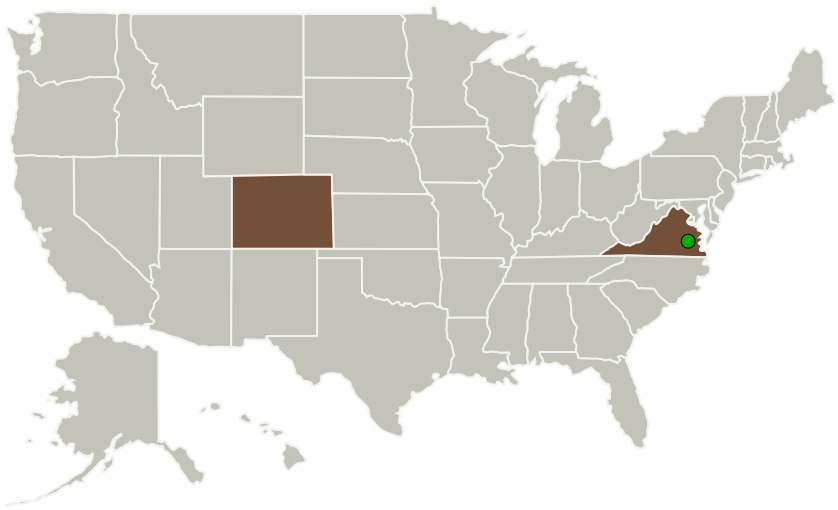
Multifunction Lidar for Air Data and Kinetic Air Hazard Measurement, Phase II

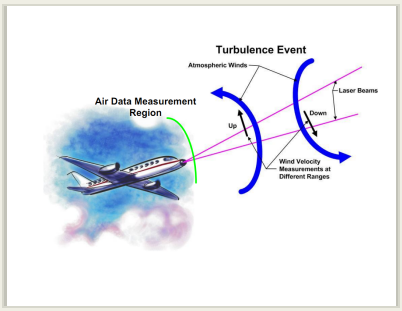
Completed Technology Project (2012 - 2015)

Project Introduction

Ophir's Phase I research was highly successful and all contract objectives and tasks were successfully completed. In Phase II, Ophir proposes to continue this important research by developing and flight testing a multifunction, low-cost, laser radar capable of enhancing aviation safety by accurately measuring kinetic air hazards, providing supplemental air data, and enhancing ride comfort. The innovation is providing a single, cost-effective sensor that has multiple-use functionality, in a package that is easily integrated onto commercial aircraft. Conventional air data systems provide critical information to the aircraft for safe flight, but there are vulnerabilities, as evidenced by the recent Air France accident. A more robust air data system for flight controls on aircraft is needed - particularly to measure airspeed in icing and severe weather conditions. This proposed sensor also detects and quantifies kinetic air hazards which impact the safety of air traffic; enhances ride comfort while reducing airframe fatigue; decreases fuel consumption, and reduces the frequency and severity of encounters with turbulent events. Building upon the Phase I design and performance trade studies, Phase II will finalize the prototype design, assemble the working prototype, perform Proof-of-Capability laboratory testing, package the prototype for flight testing and demonstrate the multifunction lidar technology in a representative flight environment (TRL 5).

Primary U.S. Work Locations and Key Partners





Multifunction Lidar for Air Data and Kinetic Air Hazard Measurement Project Image

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Organizations Performing Work	Role	Type	Location
Ophir Corporation	Lead Organization	Industry	
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
Colorado	Virginia

Project Transitions

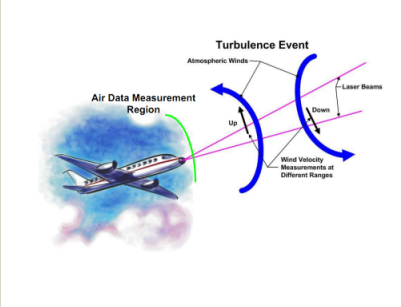
April 2012: Project Start

July 2015: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137368)*

Images



Project Image
Multifunction Lidar for Air Data and Kinetic Air Hazard Measurement Project Image
(https://techport.nasa.gov/image/133826)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Ophir Corporation

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Loren M Caldwell

Co-Investigator:
Loren M Caldwell

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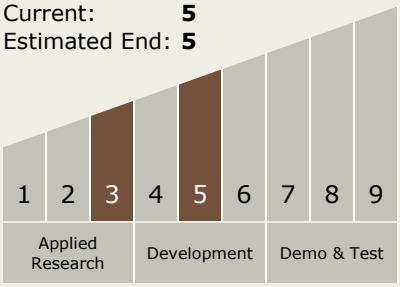
Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.3 Aero Propulsion
    - TX01.3.1 Integrated Systems and Ancillary Technologies

Target Destinations

Earth, The Moon, Others Inside the Solar System, Outside the Solar System, The Sun, Mars